

Can Financial Incentives Enhance Educational Outcomes? Evidence from International Experiments

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Executive Summary

In recent years, there has been a revival of interest in financial incentives to encourage students to attend school and to improve their academic achievement, graduation rates, and other outcomes. Conditional cash transfer programs in developing countries, especially PROGRESA in Mexico, have found positive effects on attendance in large-scale randomized experiments, and this has encouraged similar initiatives throughout the world, including programs currently under way in New York, Washington, DC, and Chicago. This article reviews research on effects of conditional cash transfers and other financial incentive schemes on educational outcomes. Major findings of the review are as follows.

- Research in developing countries has found that providing families with significant financial incentives increases students' attendance. However, effects are limited to secondary schools (as attendance is already high in primary schools) and is modest in magnitude, ranging from 3 to 10 percentage points in most studies. Effects on graduation rates and on actual learning have been smaller and less well documented.
- Research in developed countries has been less encouraging. A major study of Education Maintenance Allowances in the U.K. found that monthly stipends improved students' attendance in post-16 education but did not contribute to their achievement. U.S. studies of Learnfare and related approaches in which teen parents and others on welfare can lose welfare payments if the teens do not attend school regularly have shown few benefits for attendance and none for graduation or learning.

Recommendations

Based on the evidence from developing as well as developed countries, the following recommendations can be made:

1. In developing countries, there is strong evidence for positive effects of financial incentives on improving attendance, and such strategies may be good policy if they are cost-effective and combined with improvements in the schools themselves.
2. Financial incentives for attendance and learning are worth trying in developed countries as a means of improving attendance in secondary schools for hard-to-reach teens.
3. There is no evidence supporting the use of financial incentives to increase learning, and little to support effects on graduation. However, use of financial incentives in combination with other improvements in teaching that have been proven to increase learning may be effective.
4. Positive incentives for attending school seem to work better than sanctions for failing to go. The amount of money may be less important than the recognition for accomplishment

provided by positive incentives.

5. The cost-effectiveness of financial incentives has not been established. Financial incentive schemes should be compared with less expensive alternatives.

For hundreds of years, policy makers and philanthropists have entertained the idea that poverty could be alleviated by providing impoverished families and individuals with direct payments or other tangible benefits if they engaged in behaviors that were believed to be beneficial to the poor themselves and to society as a whole. For example, Robert Owen in New Lanark, Scotland, created a community in which families received subsidised housing and other benefits if they avoided drunkenness and other negative behaviors. In the 1820's, New York City provided financial rewards for children who did well in school (Ravitch, 2001).

In recent years, the idea of financial incentives to motivate positive behaviors in whole populations has once again become popular. These schemes are often called “conditional cash transfer programs,” because they provide benefits to families conditional on their engaging in specified behaviors. In particular, experiments in developing countries such as Mexico (Dubois, Janvery, & Sadoulet, 2003; Skoufias & Parker, 2001; Attanasio, Meghir, & Santiago, 2005), Colombia (Attanasio, Fitzsimons, & Gomez, 2005; Barrera-Osorio, Bertrand, Linden, & Perez-Calle, 2008), Bangladesh (Arends-Kuenning & Amin, 2004), Brazil (de Janvry et al., 2006), and Pakistan (Chaudhury & Parajuli, 2006) have shown various positive outcomes of conditional cash transfer programs providing financial benefits to impoverished families if they engaged in specified health and educational behaviors. Inspired by these examples but recognizing the very different contexts and needs, policy makers and social scientists in developed countries have also begun to experiment with financial incentive programs for families in areas of persistent poverty. Most strikingly, an experiment currently under way in New York City is evaluating a program in which children and families receive cash rewards for educational achievement, preventive health care, workforce participation, and other positive behaviors. The outcomes of the New York experiment are not yet known, but the scale of it, involving 2550 families in six disadvantaged neighborhoods and an annual budget of \$150 million, speaks to the seriousness of this closely-watched effort to policy makers. Similarly, a \$2.7 million experiment in Washington, DC, called “Capital Gains” is paying middle school students based on their attendance and grades (Turque & Aizenman, 2008).

Research on unconditional cash transfers, such as traditional welfare payments, finds few effects on school enrollment or other outcomes (Behrman & Knowles, 1999; Nielsen, 1998). The question is, can conditional programs have a greater impact?

One encouraging aspect of the movement toward conditional cash transfers is that it has come with a strong emphasis on large-scale, rigorous research, often with random assignment. As a result, the field is learning a great deal about what works in this area.

This article reviews research on financial incentives intended to improve the school success of disadvantaged children in primary and secondary schools, with a particular focus on the implications of the research to date for policies and practices in high-poverty areas in other developed nations.

Conceptual Issues

In concept, it would be surprising if financial incentives were not effective for increasing certain educational outcomes. In practice, however, the issues are complex. One frequently discussed question relates to the possibility that providing extrinsic incentives to families or children for doing things they already do at some level could reduce intrinsic motivation to do these things after the incentives are withdrawn (see Aber, Willner, & Quint, 2008; Bettinger, 2008; Raymond, 2008). Laboratory research, mostly involving young children, has documented the existence of circumstances in which extrinsic incentives do undermine intrinsic motivation (Deci & Ryan, 2002), but among primary and secondary children in longer-term incentive experiments the undermining effect is rarely seen (Cameron & Pierce, 1994, 2002). Still, there is always a question of the long-term impact of incentive schemes. If financial incentives could perform a pump-priming function, establishing positive patterns that could maintain themselves after the incentives are withdrawn; these policies would be far more appealing than would be the case if positive behaviors only last as long as the incentives do. Similarly, there is a question of cost-effectiveness. At a population level, financial incentives can be very expensive, so impacts must justify this expense, particularly in comparison to equally feasible alternatives (deBrauw & Hoddinott, 2007; Reimers, da Silva, & Trevino, 2006).

Financial incentives are often opposed on philosophical grounds, as “paying people to do what they should be doing anyway.” Further, there are often issues of fairness, where some families or children are eligible for incentives and others are not. Finally, advocates for the poor express concern that financial incentives could undermine political support for traditional welfare payments to impoverished families. Policy makers and taxpayers might reason that while they are happy to support the deserving poor, other struggling families, who for whatever reason do not earn financial incentives, need not be supported (deBrauw & Hoddinott, 2007).

Financial incentives raise thorny philosophical, political, and social questions which will surely be debated by policymakers concerned about breaking the cycle of poverty and school failure endemic to certain communities. In these debates, different people may have different opinions, but all should know what the facts are about realistic applications of financial incentives in real communities. The purpose of this article is to present the current state of the evidence on practical applications of financial incentives to improve academic achievement.

Review Methods

The methods used in the current review are adapted from those used in a series of reviews called the Best Evidence Encyclopedia (BEE: see Slavin, 2008). Previous BEE reviews have focused on innovative curricula, ICT, and professional development programs for primary and

secondary schools (see Slavin & Lake, 2008; Slavin, Cheung, Groff, & Lake, 2008; Slavin, Lake, Madden, Chambers, Cheung, & Davis, 2008; Slavin, Lake, & Groff, in press). Financial incentive schemes are considerably more complex and diverse than math and reading programs, and a wider variety of outcomes are typically studied, so procedures have been adapted to this arena.

Literature Search Procedures

A broad literature search was carried out in an attempt to locate every study that might meet the inclusion requirements. Electronic searches were made of educational databases (ERIC, JSTOR, Psych Info, Dissertation Abstracts) using key words “conditional cash transfers,” “financial incentives,” and related terms. References from previous reviews by Aber, Willner, & Quint (2008), Rawlings & Rubio (2005), and Reimers, da Silva, & Trevino (2006), as well as references in reports of individual experiments, were also obtained.

Inclusion Criteria

Studies highlighted in this review were ones that met the following criteria.

1. They evaluated programs in which disadvantaged families and/or their children in primary or secondary school could earn cash or other immediate, tangible benefits for engaging in behaviors likely to increase the children’s academic success, such as maintaining acceptable levels of attendance, doing homework, and improving grades, test scores, or graduation.
2. The incentive program was in place for at least a school year.
3. Children whose educational outcomes were assessed were compared to a control group of children of similar ages, socioeconomic status, prior educational achievement, ethnicity, and other factors. Ideally, children, families, neighborhoods, or schools were randomly assigned to conditions, but this was not a minimum inclusion criterion.
4. Experimental and control children had to be within $\pm 50\%$ of a standard deviation on matching variables, such as pretests. Pretest differences had to be quantified and posttests had to be adjusted for any pre-existing differences, or enough information had to be provided to allow adjustments to be made (see below).

Calculation of Effect Sizes

Throughout this article, outcomes of financial incentive schemes are either expressed in easily understood units (e.g., percent daily attendance) or are reported as effect sizes (ES), the proportion of a standard deviation by which experimental groups exceed controls on outcomes. Effect sizes are computed by dividing posttest differences (adjusted for pretests or covariates)

divided by the unadjusted control group standard deviation. If posttests have not been statistically adjusted, we subtract pretest effect sizes from posttest effect sizes (see Lipsey & Wilson, 2001; Slavin, 2008).

Studies in Developing Countries

Most research on conditional cash transfer models has taken place in impoverished areas of developing countries, initially in Latin America (Rawlings, 2005; Rawlings & Rubio, 2005) and later extending to other countries. This section reviews research evaluating these programs.

PROGRESA (Mexico)

Perhaps the most important evaluation of a conditional cash transfer scheme is PROGRESA, a randomized evaluation of a large, ambitious financial incentive scheme in Mexico. The name is a Spanish acronym for “Health, Nutrition and Education.” Beginning in 1997, several poor rural communities in Mexico were identified on the basis of indicators of poverty and access to schools and health centers (because without these, families could not comply with the requirements to receive the incentives). Within these communities, households were identified based on further indicators of poverty, housing, presence of running water, and so on.

The main focus of PROGRESA is on school enrollment and attendance. Families could receive up to \$62.50 per month if their children attended school regularly. This represented 52% of the beneficiaries’ income, so it was a substantial incentive. The amount of the incentive increased with the age of the children, who had to attend school 85% of all days to have their families qualify. The average grant per household was \$34.80 for all beneficiaries, or 21% of their income. Children who failed a grade more than once lost eligibility, so there was also some focus on actual achievement, and there was an additional nutritional supplement of \$10 per month.

The PROGRESA program is enormous. In 1998 it was in 10,000 localities, and by the end of 1999 it was in 50,000 localities, serving 2.6 million households, which was 40% of all rural families and 11% of all households in Mexico. By 2003, it served 4 million households. Now called *Oportunidades*, the program has continued to expand and also exists in some urban areas.

The evaluation of PROGRESA involved 506 rural localities (villages), with 25,000 households. A delayed treatment randomized experimental design was used. That is, on the basis that the program could not start everywhere at once, 320 villages were randomly chosen to participate in the program starting in May, 1998, and 186 had to wait until December, 1999. The delayed treatment control group was matched with the experimental group.

Schultz (2001) and Attansio, Meghir, & Santiago (2005) presented the main comparisons of treatment and control outcomes. Not all children randomly assigned to the treatment group

actually received the treatment, but comparing all experimental and all controls, effects favored the experimental children. However, the effect was not statistically significant for young children (age 6-9), but was largest for the oldest children (ages 14-17).

De Janvry & Sadoulet (2004) (see also Dubois, Janvry, & Sadoulet, 2003) analysed some of the PROGRESA data to understand where it made the greatest difference. Their analysis readily explained the lack of effects in primary schools; school attendance at that level was already 97%. However, attendance dropped precipitously in the first year of secondary school, to 64% in control communities and to 76% in experimental ones. By the upper secondary grades attendance dropped to 43%, with little difference between experimental and control schools. The point of the de Janvry & Sadoulet (2004) analysis was that the conditional cash transfer payments might have been more efficiently targeted on the early secondary years, where many disadvantaged students begin to leave school, often to take very low-paying jobs. At that point, the payments effectively make school a financially attractive alternative to work, a dynamic of little importance in primary school. This also noted that there were subgroups, such as children of indigenous fathers and children in villages lacking a secondary school, who had low attendance levels to begin with but showed particularly large benefits of participation. Providing incentives to these specific subgroups would be, they argue, more cost-effective than providing them to all.

Behrman, Sengupta, & Todd (2001) also analysed PROGRESA data, and noted some additional patterns. First, they found less grade repetition and better grade-to-grade progression, as well as fewer dropouts, among the PROGRESA students. They found slightly higher effects for girls, and most importantly, they projected a cumulative effect of continued program participation that would make a substantial difference by age 14 in attendance rates and school success, which they use to predict significantly greater earnings for these students after graduation.

In addition to confirming the attendance effects, Skoufias & Parker (2001) also noted a significant decrease in the percentage of secondary students working. They note that this is simply the obverse of the greater school attendance; students chose to attend school rather than to work, presumably because the incentives were large enough that school simply paid better than the types of work ordinarily available to these young people.

Familias en Acción (Columbia)

Based directly on the successful evaluation of PROGRESA in Mexico, Familias en Acción was undertaken in Colombia beginning in 2001, with full implementation in 57 high-poverty communities by 2003. Within each community, the poorest 20% of households were targeted for conditional cash transfers based on their behaviors relating to health, nutrition, and education. Families could receive up to about \$10 per month for primary school children and \$20 for secondary children, which was estimated to be 3% to 6% of monthly income. Assignment to conditions was matched rather than randomized, with control communities selected based on poverty, geographic location, and availability of schools and healthcare facilities.

The overall outcomes for Familias en Acción were similar to those for PROGRESA (Attanasio, Fitzsimmons, & Gomez, 2005). There was no effect for urban 8 to 13 year olds, but 94% of these children were already attending school. The program increased attendance in rural schools from 89% to 92% ($p < .05$). As in PROGRESA, the larger impact was with the older students. Attendance in the urban schools increased from 72.0% to 77.3% ($p < .05$) under the program, while the rural schools increased from 54.4% to 60.3% ($p < .01$). As in PROGRESA, the program made its greatest difference where baselines were low, in secondary schools. Effects were larger for boys in both rural and urban primary schools, but in secondary schools effects were higher for boys in the urban areas but girls in rural areas. In all cases boys had much lower baselines.

The Attanasio et al. (2005) report also noted an important methodological problem. There was a period of time when the experiment was being set up but before payments were actually made. During this time, attendance improved significantly, apparently in anticipation of the payments. The analyses adjusted for this early impact, but had “pre-baseline” measures not been taken into account, treatment effects would have been greatly underreported.

Subsidios Condicionados a la Asistencia Escolar (Colombia)

A second major conditional cash transfer evaluation in Colombia took place in Bogotá starting in 2005 (Barrera-Osorio, Bertrand, Linden, & Perez-Calle, 2008). This program, called Subsidios Condicionados a la Asistencia Escolar (Conditional Subsidies for School Attendance), was designed to keep students in school and reduce child labor. Families received about \$15 per month if their child in grades 6-11 attended at least 80% of school days that month. This amount was about 24% of monthly income, but was close to what parents spent on books, uniforms, and supplies to send their children to school. In a one-year pilot study before full roll-out of the scheme, three variations were compared. In one, families were paid \$10 per month immediately, and \$5 was put into a savings account, which parents received if their children enrolled in school the following year. The third treatment also reduced the monthly payments to \$10, but students received a one-time payment of \$300 if they graduated from secondary school.

Students in grades 6-11 in two Bogota neighborhoods participated in the study. In one, 10,947 students were randomly assigned to the basic treatment (\$15), the savings treatment (\$10 + \$5 to savings), or control. In the other, 6,362 students were randomly assigned to the basic treatment or control if they were in grades 6-8, or to the graduation bonus or control conditions if they were in grades 9-11.

Overall, the treatments increased attendance by 2.8%, from 79.4% in the control group to 82.2% in the experimental groups. The effects were somewhat larger for grades 9-11 (3.7%) than for 6-8 (2.3%). The gains for the basic treatment (3.3%) were slightly higher than those for the savings treatment (2.8%), but in grades 9-11, effects were larger for the graduation bonus treatment (5.0%) than for the basic treatment (3.0%). Effects were larger for students who had attended less than 80% of the time before the experiment (who gained from 72.8% to 77.1%, or 4.3% more than control daily attendance) than for students who had already been attending 80%

of the time (who gained from 85.7% to 88.1% daily attendance, or 2.4% more than control). The treatments also increased the chances that students would enroll in school the following year by 2.6% overall.

Finally, the treatments, especially the graduation bonus, significantly increased the chances that students in the final year of secondary would graduate and enter further education. This effect was dramatic for the graduation bonus condition, increasing self-reported enrollment in higher education from 22.7% to 72.4%, or a gain of 49.7%. The basic and savings treatments increased higher education enrollment by 4% and 9%, respectively. The sample for these comparisons was much smaller than for the others and self-reports may have been inaccurate, but this is a particularly important finding, which is likely to be explained by the fact that the bonus of \$300 was paid at exactly the point when families needed it to pay fees for attendance in vocational or other post-secondary programs. It was estimated that the bonus would cover 73% of these fees.

Bono de Desarrollo Humano (Ecuador)

A study in Ecuador evaluated a conditional cash transfer program called Bono de Desarrollo Humano¹ (BDH), targeting the most impoverished 40% of families with children. The program began in 2003. It provides up to \$15 per month to parents of children ages 6 to 15 if they are enrolled in school and attending 90% of school days. In addition, parents can receive payments if they take their children under 6 years of age for regular medical check-ups. Two experiments evaluated BDH in four provinces (Oosterbeck, Ponce, & Schady, 2008). Within the provinces, parishes were randomly selected and within parishes, households were randomly selected if they had at least one child aged 6-15. One study was a randomized experiment, focusing on households in the 13th to 28th percentiles on a poverty index. Half of the selected households received the cash transfers and half did not. The second experiment involved households from the 33rd to the 40th percentile, and used a regression discontinuity design (RDD) that compared the eligible families to ineligible families just above the cutoff, in the 40th to 47th percentiles of poverty. The experiment involved 3004 children in 1309 families, while the RDD involved 2384 children in 1221 families.

Results were markedly different for the two subsamples. The experiment involving the poorest households found that the cash transfers increased attendance from 75% to 85%. There was also a 17% reduction in children working (Schady, Caridad, & Araujo, 2006). However, the regression continuity design for the less impoverished group found that attendance was unchanged, at 85%.

¹ Coupon for Human Development

Superémonos (Costa Rica)

Duryea & Morrison (2004) reported a matched evaluation of a program called Superémonos² in Costa Rica. In I, households received coupons worth about \$30 per month redeemable for food in supermarkets, if their children were regularly attending school. The evaluation used propensity matching to create a control group for participants in the program. Among children aged 12 to 15, there were significant effects of participation on attendance, estimated at adding 5.0 percentage points in 2001 and 8.7 percentage points in 2002. However, there were no significant effects on passing the previous grade or on child labor.

PATH (Jamaica)

PATH, for Program of Advancement through Health and Education, was instituted in Jamaica beginning in 2001. It replaced three non-conditional programs (food stamps, welfare, and public assistance) with grants conditional on the recipients' behaviors. Poor families with children could receive about \$6.50 per month per child. This depended on children through age 6 visiting a health clinic every two months in the first year and twice a year thereafter. Children ages 6 to 17 had to attend school at least 85% of school days. In addition, PATH families received waivers of certain education and health fees. As of 2007, approximately 245,000 individuals had enrolled in PATH.

The outcomes of PATH were evaluated by an external evaluator, Mathematica Policy Research (Levy & Ohls, 2007), using a regression discontinuity design comparing households just below the eligibility criterion (just-eligibles) to those just above (near-eligibles), controlling for the eligibility scores. There were 2500 just-eligible and 2500 near-eligible (control) households. According self-reported survey data, the children ages 6-17 in PATH attended significantly more than controls, 85.6% of days compared to 83.0%. In contrast to findings in the PROGRESA studies, impact estimates were similar for children ages 6-9 and 13-17 (though lower for ages 10-12). Impacts were higher in Kingston than in rural areas, but were similar for boys and girls and for children who had high or low levels of prior attendance.

The PATH evaluation is unusual in evaluating impacts on actual school achievement, as opposed to attendance. There were no significant differences in self-reported advancement to the next grade or in self-reported grades relative to the previous year. Beyond the education impacts, there was a significant effect on the number of visits to health centres for children ages 0-6, with a particularly large impact for children ages 0-1.

Female Secondary School Stipend (Pakistan)

In Pakistan, an important policy problem is poor attendance of girls in secondary schools. As part of a broader reform initiative, the state of Punjab initiated in 2004 a gender-based

² "We Will Overcome"

conditional cash transfer program. Parents with girls in grades 6-8 could earn about \$3 per month if their daughters attended at least 80% of school days. A study by Chaudhury & Parajuli (2006) compared girls' schools that were eligible for stipends to those that were not, controlling for numerous impacts. Changes over time in enrollments in boys' schools, which were not eligible for stipends, were also compared to changes for girls' schools as an additional control. Several analysis methods were used, but they converged in finding an increase of about 9% in attendance in the girls' schools that received stipends.

Girls' Scholarship Program (Kenya)

A very different approach to financial incentives from the Latin American and Caribbean conditional cash transfer schemes was implemented in rural Kenya beginning in 2001. The pilot program provided awards of \$38 to girls ages 13-15 who received high test scores, averaging across five subjects. In an area in which annual per capita income averages \$360, this was a significant award. Kremer, Miguel, & Thornton (2004) carried out a randomized evaluation of the program. A total of 127 schools were randomly assigned to experimental and control conditions. The study ran for two years; in each year, winning girls were recognized in award ceremonies, helping to communicate the possibility of awards to the whole community. An average of five girls in each school won awards.

In comparison to control schools, girls in experimental schools gained in achievement levels by an effect size of +0.15 (i.e., 15% of a standard deviation), a small but statistically significant effect. Outcomes were much larger in one district (Busia) than in another (Teso). In Busia, the effect sizes were +0.27 for cohort 1 and +0.22 for cohort 2, while they were near zero in Teso, apparently due to serious political problems in the area. The gains in Busia were seen across all levels of pretests, even though girls with low pretests had no realistic chance of winning. Small positive effects were also seen for boys, perhaps because of competition with the girls. Girls in Busia also had a significant 5% increase in attendance. Surprisingly, and boys in the experimental schools also gained in attendance to the same degree, and teachers' attendance increased by a significant 5%, even though neither boys nor teachers could win awards.

Conditional Cash Transfer Programs in Other Developing Countries

Conditional cash transfer programs have been implemented on a significant scale in many developing countries in addition to those discussed above, but have not yet been evaluated in studies meeting the standards of this review. Reimers, da Siliva, & Trevino, 2006 (see also Rawlings & Rubio, 2005) describe some of the programs discussed in this article as well as programs in Brazil, Honduras, Nicaragua, Indonesia, and Bangladesh. Programs focusing just on girls have been implemented in Malawi and Guatemala.

Studies in Developed Countries

While studies in developing countries are interesting and useful, their context does not transfer readily to policies in developed countries such as the U.K. or the U.S. Poverty in inner-

city Manchester or Baltimore has little in common with poverty in rural Mexico or Kenya, where incomes are so low that small incentives for attending school can represent a significant proportion of families' incomes. In developing countries it is a legitimate policy objective just to get more students to attend secondary school at all, and to reduce child labor. In developed countries, increasing attendance and reducing dropout are also important, but government policies focus more on high achievement and entry into post-secondary education (see Torgerson, See, Low, Wright, & Gorard, 2007). Further, there are many more feasible alternative types of interventions in developed countries. For all of these reasons, research in the developed world is of particular relevance to informing policies in other developed countries. The ambitious New York study, currently under way (Center for Economic Opportunity, 2008), will ultimately provide the most definitive evidence, but other studies also give important information relevant to policy. Studies of financial incentives in developed nations are summarized in this section.

High School Matriculation Awards (Israel)

In Israel, the high school matriculation exam, or Bagrut, is the crucial end point of secondary education. It is a formal prerequisite for university admission. As in all countries, tests of this kind produce results that vary substantially by socioeconomic status, leading to extensive efforts to improve outcomes in high-poverty areas (see for example Dynarski & Gleason, 2002).

Angrist & Lavy (in press) evaluated an Israeli program designed to improve Bagrut performance in low-performing secondary schools. In 2000, 40 schools were recruited including 20 Jewish secular schools, 10 Jewish religious schools, and 10 Arab schools. Schools were randomly assigned to experimental or control conditions, stratifying on school types and blocking on previous Bagrut passing rates. There were 4039 high school seniors.

Every student in an experimental school was eligible for a cash payment if they passed the Bagrut, up to a maximum payment of \$1500 for any students who passed. Small awards were also given for successfully passing from grades 10 to 11 and 11 to 12, and for taking any Bagrut component test, regardless of outcome. A student who qualified for all of these incentives and passed the Bagrut would receive a total of about \$2400, which is about twice as much as a student could earn working for two months in the summer.

Results showed significant positive effects on passing the Bagrut for girls but not for boys. However, effect sizes for girls were quite small, averaging +0.10. For boys, effect sizes were slightly negative (ES=-0.02). A follow-up in 2006 found that girls, but not boys, who had been in the experimental groups were more likely to be in post-secondary institutions.

Educational Maintenance Allowance (UK)

The most important U.K. study of financial incentives in education was the Educational Maintenance Allowance pilot (Middleton et al, 2005). This study followed two cohorts of students who completed Year 11 in 1999 and 2000. Students whose parents' gross annual taxable

income was less than £13,000 could receive £30 to £40 per week if they stayed in full-time education after the end of compulsory education. Students from families making up to £30,000 per year received smaller payments, down to a minimum of £5 per week.

The evaluation used propensity score matching to compare participants in the Educational Maintenance Allowance scheme to similar individuals of the same ages. EMA was estimated to add 5.9 percentage points to participation in full-time education, with stronger impacts on young men (6.9 percentage points) than on young women (5.0 percentage points). Correspondingly, there was a decrease in young people in work or training (-3.4%) and in the percent not in education, employment, or training (NEET) (-2.4%). While there were significant differences favouring the EMA group at ages 16, 17, and 18, there were no differences at 19, and no cumulative effect on post-16 achievement.

Learnfare (Wisconsin, USA)

An earlier cousin of conditional cash transfer policies in the U.S. was called Learnfare. Under this policy, introduced in Wisconsin in 1988, recipients of Aid to Families with Dependent Children (AFDC) with teenagers could have their payments reduced if their child had two or more unexcused absences in a given month. The reduction was equal to the amount the child contributed to the AFDC payment (see Ethridge & Percy, 1993). The same sanctions were applied to teenagers who were parents themselves (and receiving AFDC).

An evaluation of Learnfare was carried out by Pawasarat, Quinn, & Stetzer (1992). Students in four districts subject to Learnfare were compared to matched control students. There were no significant differences in attendance for the teenagers with AFDC parents or for the teen parents.

LEAP (Ohio)

LEAP (Learning, Earning, and Parenting Program) was a program for pregnant teenagers and teen parents on welfare (AFDC). It began in 1989, and was implemented throughout Ohio. Participants earned \$62 for school enrollment and then \$62 per month when they attended school regularly (no more than two unexcused or four total absences in a month). If they did not attend school and did not have an acceptable excuse, their welfare checks were reduced by \$62. Since monthly AFDC checks averaged \$274, the difference between receiving the \$62 bonus or \$62 reduction represented 45% of their monthly check. The participants were assigned case managers who provided advice and helped with problem, such as child care and transportation that could interfere with school attendance.

A large-scale evaluation of LEAP was carried out by Bos & Fellerath (1997). A total of 4,151 teens (almost all women) were randomly assigned to treatment or control groups, and then followed over a four-year period. In the three years after random assignment, there were marginally significant differences in the number of participants completing grade 11 (50.0%

experimental vs. 45.4% control, $p < .10$), but no differences in high school completion (22.9% vs. 23.5% n.s.) or in receiving a GED (11.1% vs. 8.4%, n.s.).

Cal-Learn (California, USA)

Cal-Learn was a statewide program similar to Ohio's LEAP designed to help pregnant and parenting teenagers on welfare to either complete high school or complete a general educational development (GED) certificate, which requires passing a test and is considered an equivalent of earning a high school degree. Cal-Learn, which began in 1994, provided two program elements:

- a) Financial bonuses and sanctions, and
- b) Intensive case management

The financial incentives included a bonus of \$500 upon graduation (or passing the GED test) paid directly to the young woman, and progress bonuses of \$100 for satisfactory school progress. If report cards were missing or indicated unsatisfactory progress, \$100 could be deducted from the family's welfare payment. Case managers were county employees who provided encouragement and advice, provided information and referrals, and arranged for needed services.

Mauldon, Malvin, Stiles, Nicosia, & Seto (2000) carried out a large randomized evaluation of Cal-Learn. Participants were randomly assigned to one of four groups: Full Cal-Learn ($n=1007$), financial incentives only ($n=976$), case management only (964), or no treatment (control) ($n=1010$).

On the main outcome variable, receipt of a high school diploma or GED, the combined program group did best. Graduation rates were 17.5% for the full Cal-Learn program, 13.5% for financial incentives only, 10.7% for case management only, and 4.7% for no treatment. Analyses at different age levels and on different measures of outcomes found that the effects were entirely due to differences in GEDs; the treatments did not affect high school graduations. All analyses found the same pattern of results, with graduation rates for the full program always significantly higher than controls and effects for financial incentives alone usually significantly higher than control.

School Attendance Demonstration Project (San Diego)

The School Attendance Demonstration Project was a program designed to sanction students ages 16-18 who were on public assistance but not attending school. Pregnant or parenting teens were excluded, as they were served by Cal-Learn (see above). Using the last digit of their Social Security numbers, 4849 students were randomly assigned to an experimental group and 2398 to a control group. In the experimental group, students who attended fewer than 80% of school days could have their contribution to their parents' public assistance grant deleted.

Each student was also assigned a case manager who acted as a service broker, advocate, and attendance monitor, to address any reasons students were not attending school.

A study by Jones, Harris, & Finnegan (2002) evaluated the outcomes. They reported that the sample was about 36% Asian/Pacific Islander, 30% African American, 23% Hispanic, and 11% White. The study took place from February, 1996 to February, 1998. Among students in the experiment at the end ($n=1655E$, $831C$), attendance was 6 percentage points higher in the experimental group (.75 vs. .69).

Monthly Grade Stipend (USA)

Spencer, Noll, & Cassidy (2005) evaluated a program in which high school students could earn monthly stipends if they maintained A's and B's in major subjects. Students had to meet federal free lunch criteria. Each month they met the criteria, ninth graders received \$50, 10th graders received \$55, and 11th graders \$60.

The program was evaluated in an unnamed city in 41 schools. A total of 534 students were randomly assigned to receive the stipends ($n=35$) or to be in a delayed treatment control group ($n=209$). The students were in grades 9-11 and 45% were African American, 23% Asian American, 12% Hispanic, and 10% White. After a year, students in the stipend group were 10% more likely than controls to be in good standing (ie, receiving A's and B's as their fourth quarter grades). The stipend group had 61% of students in good standing while the control group had 51% ($p<.01$). Outcomes were similar across grade levels and ethnicities. However, experimental-control differences were larger for girls (14%, $p<.01$) than for boys (2%, n.s.). Graduation rates in June, 1998, were not significantly different (experimental=57.5%, control=55.4%, n.s.).

Advanced Placement Incentive Program (Texas)

The Advanced Placement Incentive Program (APIP) is a program in Texas that provides cash incentives to both teachers and students for each passing score earned on an Advanced Placement (AP) exam (AP exams, taken after completing an AP course in 11th or 12th grade, can qualify highly able high school students for college credit). APIP was intended to increase the numbers of low-income, especially minority students taking and passing AP courses and exams.

The APIP program in Dallas, Texas, provided salary bonuses of \$3000-\$10,000 to teachers for teaching AP courses, with an additional bonus of from \$100 to \$500 per student who received a passing AP score. For students, APIP pays half of the cost of taking the exam itself and from \$100 to \$500 for each passing score. There are 35 courses and exams a school can choose from, and an individual student might take up to two per year.

Jackson (2008) reported a post-hoc matched evaluation of APIP carried out by looking at matched APIP and non-APIP schools throughout Texas. These schools were lower than average in overall performance levels than Texas schools in general, and had higher proportions of minority students (29% White) than the state in general (53% White). Several types of

comparisons were made, but the most useful was a comparison between APIP schools and schools that would enter APIP later but had not yet done so by the time of the comparison. Adoptions of APIP was associated with 2.3 percentage-point increase ($p < .05$) in 11th and 12th graders taking at least one AP exam, a 13% increase ($p < .05$) in students scoring above 1100 on the Scholastic Achievement Test, and a 5% increase ($p < .10$) in the number of students matriculating in college. A comparison to demographically matched control schools that never adopted APIP found nearly identical impacts. There were no effects, however, on the number of high school graduates and no effect on the number of students enrolling in AP courses.

Opportunity NYC (New York City)

For the developed world, perhaps the most important current experiment relating to financial incentives is Opportunity NYC, the conditional cash transfer program under way in New York City (see Center for Economic Opportunity, 2008). This initiative is based directly on Mexico's PROGRESA (now called Oportunidades), with adaptations to the very different context of New York City. It incorporates three distinct programs: Family Rewards, Work Rewards, and Spark. Family Rewards involves 5100 families randomly assigned within disadvantaged neighborhoods to experimental or control conditions. Families in the program can earn up to \$6000 per year, based on a variety of behaviors. For example, incentive payments include \$25 for attending a parent-teacher conference, \$600 for a child passing a Regent's Exam, \$100 for a preventive health screening, and \$150 a month for maintaining full-time employment. Families receive a coupon book and submit documentation (such as a doctor's signature) for the specified activities. Money is then delivered into a bank account or value card. The first incentive period began in September, 2007. MDRC is evaluating the program over a five-year period, using quantitative, qualitative, and cost-benefit analyses.

The Work Rewards program offers incentives to families living in subsidised housing who are working. This program is being evaluated separately from Family Rewards.

Finally, the Spark program is giving students themselves payments based on their performance on standardized tests. Fourth graders can earn up to \$250 and seventh graders up to \$500, earning \$25 or \$50, respectively, for scoring well on 10 tests at each grade level. The two-year incentive program began in September, 2007, and involves 59 New York City schools randomly assigned to experimental or control conditions. In the second year, group incentives will be tested, in which students will be rewarded based on the performance of a five-member group of their peers (to encouraging peer tutoring and peer support for learning).

Capital Gains (Washington, DC)

A program in Washington, DC called Capital Gains is currently providing payments to middle school students for good grades and attendance (Turque & Aizemnan, 2008). This is a project led by Harvard researcher Roland Freyer, an architect of the New York City Project. Students can earn up to \$100 every two weeks, and the average in a recent period was \$43.

The Paper Project (Chicago)

A Chicago program also led by Roland Freyer called The Paper Project is providing payments to students in grades 9 and 10 of \$50 for each A, \$35 for each B, and \$20 for each C every five weeks, so that a student with straight A's could earn \$4,000 over two years. They get half of the money right away and half when they graduate.

Financial Incentives in Education: What Have We Learned?

International interest in the use of financial incentives has grown at an extraordinary rate in the past decade, since the early successes of PROGRESA put conditional cash transfers on the map. With substantial encouragement and funding from the World Bank and other organizations, it is perhaps not surprising that this idea has spread rapidly among developing countries. Even more remarkable is the more recent interest in developed countries in adapting similar strategies. A document produced by the organisation managing the Opportunities-NYC experiment features a photograph of the Mayor of New York visiting a small village in Mexico that benefited from PROGRESA/Oportunidades. Mayors of New York do not typically seek ideas to replicate in rural Mexico, and there is a certain attraction in the idea that developing countries could help developed countries solve their problems of education in disadvantaged communities.

The evidence from developing countries is clear in showing that under certain well-defined conditions financial incentives can increase secondary school attendance. The size of the effect varies, but most studies find increases in attendance in the range of 3-12 percentage points. Effects on associated outcomes such as graduation rates and enrollment in post-secondary education are less well documented, but a few studies have found small positive impacts on these outcomes. None of the studies in developing countries, however, have documented impacts of conditional cash transfers on actual learning, or on ultimate workforce participation or other economic and social indicators. Few impacts have been seen in primary school applications of conditional cash transfers, largely because attendance in primary schools is already nearly universal, even in the poorest communities.

For developing countries, the ultimate questions about the utility of conditional cash transfers will depend on cost-effectiveness. Conditional cash transfers are hugely expensive, occupying significant portions of these countries' total education budgets. In many developing countries, the cash payments are just enough to pay school fees and the cost of books, uniforms, and transportation. How much could these countries achieve by simply eliminating school fees and providing free books and transportation, as all developed countries do? Many reviewers (eg, Reimers et al., 2006; Rawlings & Rubio, 2005) have noted that the effects of conditional cash transfers are modest, and that given the poor conditions for teaching and learning in many developing countries, getting marginal students to attend more may not have significant benefits over time. The same resources might be better used, they argue, to improve the professional preparation of teachers, the physical conditions of schools, and so on, as well as to remove the barriers to school attendance mentioned earlier. In primary schools, improving the schools themselves may be the only path to reform, as incentives do not seem to be needed (or effective)

to improve attendance at that level. At the secondary level, conditional cash transfers only affect a slice of the student population, those who might not attend school without them. For example, in PROGRESA, 64% of students in the first year of secondary school already attended, and 24% did not attend even with the incentives, so the program only affected the 12% of students who responded to the incentives (see Bourguignon, Ferreira, & Leite, 2003; de Janvry & Sadoulet, 2004).

Part of the appeal of conditional cash transfers is that they bypass the complexities of the education system and go directly to the children and their families. Yet bypassing the educators may be a shortsighted policy, as strengthening schools and teachers could have broad and long-lasting impact. Imagine, for example, that one could achieve identical attendance outcomes by improving schools or by providing financial incentives to parents. Clearly, strengthening schools would be preferable, as this would likely improve learning outcomes as well as attendance and as it would affect all children, not just those who would not attend in the absence of incentives.

Still, the demonstration that large-scale improvements in attendance can be brought about by financial incentives is important for policy and practice. It adds an effective tool to the armamentarium of educational reform in developing countries, where there are few proven and replicable strategies. Improving attendance at least provides an opportunity for marginal students to learn. The schools still must be improved to help these students and others take advantage of this opportunity.

Implications for Developed Countries

It cannot be assumed that the findings of studies in developing countries apply directly to high-poverty schools in developed countries. Limited research on financial incentives in developed countries shows potential, but the picture is mixed. The UK Education Maintenance Allowance added 5.9 percentage points to the number of young people who remained in full-time education after age 16, but there were no differences in post-16 achievement. In the US, evaluations of Learnfare and other programs emphasizing reductions in welfare payments for failure to attend school mostly had disappointing outcomes. It may be that positive incentives for attendance will work better than sanctions for failure to attend, but this remains to be seen. Financial incentive experiments currently under way in New York, Washington, DC, and Chicago will add substantially to knowledge about the potential of positive incentive strategies.

In the developed world, however, any effects of financial incentives must be weighed against equally feasible alternatives. For example, Slavin, Cheung, Groff, & Lake (2008) recently summarized research on effective literacy programs for secondary schools and Slavin, Lake, & Groff (in press) did the same for secondary mathematics. In both cases, there were several programs with effect sizes on actual achievement (not just attendance) larger than any achievement effects documented in any of the conditional cash transfer studies. These are mostly US professional development and technology approaches that could be readily replicated in the UK. All cost substantially less than financial incentives and they would likely affect all students, not just those who need incentives to come to school.

Financial incentives might be seen as part of a broader strategy for evidence-based reform in high-poverty schools. In secondary schools, there is a subset of students in high-poverty communities who are very difficult to reach, and no amount of improvement in teaching is likely to bring them to school. Targeted financial incentives may be better than a sole reliance on enforcement of mandatory attendance laws (up to age 16), and if applied to post-16 students, may increase the proportion of young people who remain in school. Financial incentives for improving grades or passing high-stakes tests may also play a part in a broader strategy for improving high-poverty schools. Yet there is no royal road to reform in education. Genuine and lasting improvements in learning for disadvantaged students will require a broad range of reforms.

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